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ABSTRACT

The purpose of this instructional packet is to inform teachers and parents about children's development of numeracy in the early years of schooling. "I Can Do Maths" questions are in a child-friendly format and require children to write, draw, count, and measure. Two "ezi-guides" are provided to make administration easier. Keeping track of the results of assessment can be time-consuming. To minimize this, the Individual Student Profile, Diagnostic Map, and Descriptive Report are provided to assist teachers. All of these provide descriptive and normative reports of children's performance in number, measurement, and space, not simply a score, so that planning a teaching program appropriate to an individual child's needs is made easier. (ASK)

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ED 455 124

I Can Do Maths.
Teacher's Guide and Test Booklets
Levels A and B.

Brian Doig and Marion de Lemos

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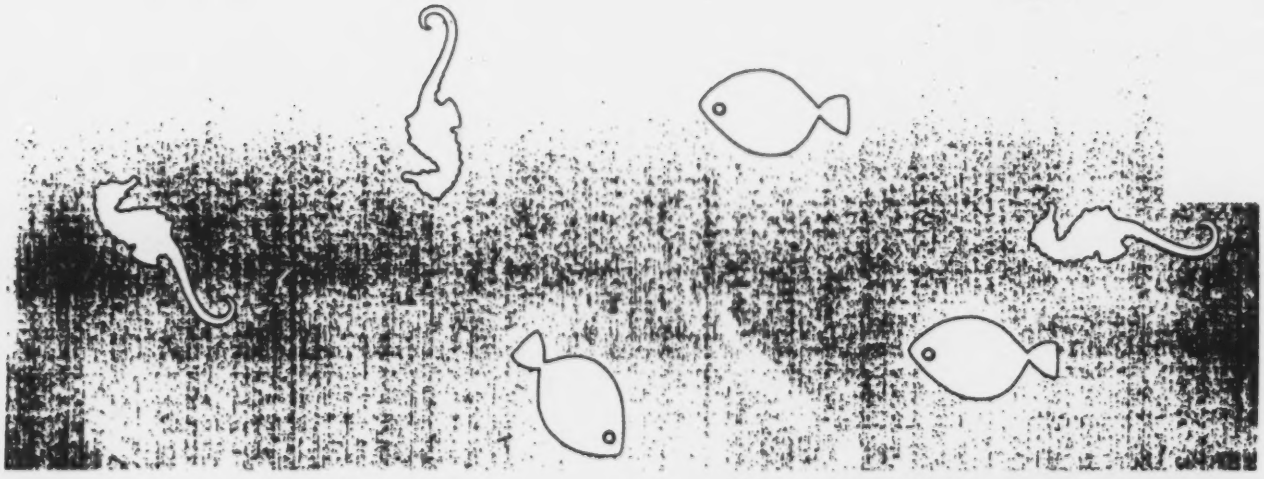
I can do maths

Teacher's Guide

Brian Doig
Marion de Lemos



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I can do maths

Teacher's Guide

Brian Doig
Marion de Lemos

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Assessment *I can do maths*

Introduction

The purpose of *I can do maths* is to inform teachers and parents about children's development in numeracy in the early years of schooling. Information about the numeracy development of children at this stage of their schooling is critical to teachers for appropriate program planning, and for the identification of 'at risk' learners.

I can do maths questions are in a child-friendly format and require children to write, draw, count and measure. These questions are typical of tasks in number, measurement and space found in early years classrooms. Two Ezi-guides are provided to make administration easier. Once you are familiar with the administration procedures detailed in this guide, an Ezi-guide can be used for the actual administration of *I can do maths*.

Keeping track of the results of assessment can be time-consuming. To minimise this an *I can do maths* Individual Student Profile, Diagnostic Map, and Descriptive Report are provided to assist teachers. All of these provide descriptive and normative reports of children's performance in number, measurement and space, and not simply a score, so that planning a teaching program appropriate to an individual child's needs is made easier.

Focus of *I can do maths*

I can do maths assesses the early numeracy skills of children in the first two or three years of schooling. The questions in *I can do maths* are designed to assess key learning objectives for the early years of schooling, as outlined in the various state and national documents on mathematics curriculum and objectives.

I can do maths questions cover the three main areas of early numeracy – number, measurement, and space – and are ordered by increasing level of difficulty. The complete set of *I can do maths* questions are contained in two separate booklets, Level A (30 questions) and Level B (33 questions). The Level A booklet is designed for use in the first two years of schooling, while the Level B booklet is designed for use from the end of the second year of schooling

Several questions are included at both levels, thus allowing continuity of assessment and the monitoring of progress across the curriculum. All questions are read to children to avoid performance being affected by reading factors. This form of administration is simplified by the use of *I can do maths* Ezi-guides that contain brief administration details and the text of every question.

The marking and recording scheme of *I can do maths* allows teachers to identify both overall numeracy performance and specific performances in number, measurement and space. Normative information for year of schooling is provided and the *I can do maths* reports provide easy identification of strengths and weaknesses of individuals and groups. These can be used for preparing appropriate programs for children and as the basis of parent-teacher discussions, while the information in the norm tables provides a means of identifying children with special needs, including the 'at risk' learner.

Background to *I can do maths*

I can do maths was developed for use in the *Curriculum and Organisation in the Early Years of Schooling* project conducted by the Australian Council for Educational Research (de Lemos, 2000). This project was designed to examine the relationship between the age of entry to school, school structure, and student outcomes in the first three years of schooling, and involved the assessment of over 3000 children on various measures of early literacy, numeracy and developmental level.

The responses given by these children to *I can do maths* questions formed the basis of the *I can do maths* norm tables and the reporting scales contained later in this guide.

Administering *I can do maths*

Before you begin

Administration procedures for *I can do maths* can be divided into two groups: general procedures that apply to both levels and specific procedures that apply to one level only. In both cases the procedures are straightforward. The early sections below give the general administration procedures, and later sections deal with procedures for Level A and Level B respectively.

Included in the *I can do maths* materials is an Ezi-guide for each level (A and B). Each Ezi-guide provides a summary of the administration procedures together with the text to be read to the children for each question. Do not use a copy of the question booklet for reading the text of questions, as in some instances not all the text is read (for example, Question 24 in Level A: the digital numbers on the clock are not to be read). Only the question text to be read is printed in the Ezi-guide.

General procedures

Time

I can do maths is un-timed, but should take no more than 30 to 40 minutes to administer. Sufficient time should be allowed for all or most children to complete each question. If children are working slowly, or seem to be tiring, a short break in the middle of the *I can do maths* session should be taken.

Group size

For children in their first year of schooling, *I can do maths* may be administered to groups of up to 10 or 15 children. For children in their second or third year of schooling, *I can do maths* can be administered to a whole class. However, if the class is large it is probably better to divide the class into two groups, or to have a second person present to check that children are following the instructions and that they understand what is required.

Reading questions

All questions should be read to the children. This means that all children will be responding to the same question at the same time. However, with older children it may be your judgment that the reading load of the *I can do maths* questions will not affect children's numeracy performance. In this case children may read questions for themselves, and work through their *I can do maths* booklet at their own pace.

Fairness in assessment

I can do maths should be presented as part of regular class activity rather than as a 'test', but without compromising the necessary standardised administration procedures that allow you to obtain an accurate measure of children's numeracy performance. Children should be seated comfortably at tables or desks, with sufficient spacing between them to make sure that they cannot copy from someone seated near them. Distracting material should be removed from the desks or tables at which they are seated.

Children should feel comfortable before starting the assessment. They are more likely to be comfortable if they understand the purpose of what they are to do. For example, you may say that you want to find out what they can do and what they still need to learn more about, so that you will know what sorts of things they should be doing in class.

Selecting a level

Throughout Australia and New Zealand there are different approaches to school entry and early years numeracy programs. In order to accommodate these differences as well as provide measures of development over time, *I can do maths* is in two levels with some similar questions at each level. Level A has 30 questions and Level B, 33 questions.

The Level A question booklet is designed for use in the first to second year of schooling, while

the Level B booklet is designed for use to the end of Year 2, which is the second year of schooling in Queensland and Western Australia, and the third year of schooling in the other states. Guidelines indicating the appropriate level according to year of schooling for each of the state school systems is shown in the table below.

Helping children

Children should not be given any help with answering the assessment questions other than by repeating (or if necessary paraphrasing) the question and indicating where they should mark their answer. If children ask for help, they should just be told 'do the best you can', or 'do what you think is best', or something along these lines.

Rough Work

Where children need to do some 'working out' tell them to use any of the space beside the questions. This rough work may help identify particular difficulties certain children are having or strategies that they are using.

	Level A	**Level B**
New South Wales	Kindergarten to end of Year 1	End of Year 1 to end of Year 2
Australian Capital Territory	Kindergarten to end of Year 1	End of Year 1 to end of Year 2
Victoria	Prep to end of Year 1	End of Year 1 to end of Year 2
Queensland	Year 1 to beginning Year 2	Year 2
South Australia	Reception to end of Year 1	End of Year 1 to end of Year 2
Western Australia	Year 1 to beginning Year 2	Year 2
Tasmania	Preparatory to end of Year 1	End of Year 1 to end of Year 2
New Zealand	New entrant to beginning Year 2	Year 2

Introduction for the children

You should remind the children of the purpose of the assessment, in simple terms that they can understand. For example, the children may be told that you want to find out what they can do and what they still need to learn more about, so that you know what sorts of things they should be doing in class, and what sorts of things they need more practice with.

Before starting the *I can do maths* assessment, you should make the following general points to the children, although the wording may be varied to suit your particular group:

- Today we are going to do some questions about shapes and numbers.
- I will read all the questions to you.
- You will have plenty of time to do the questions.
- Some of the questions are easy, and some are harder. Don't worry if you can't answer a question. Just do the best you can.
- Mark your answers on the booklet. If you make a mistake, cross (or rub) it out neatly and write your new answer.
- You may write on the booklet for rough work (working out).
- If you have a question, put up your hand. I will help you, but I won't tell you the answer.

Level A procedures

Materials

You will need a copy of the Level A Ezi-guide from which to read the administration procedures and the text of the Level A questions.

Each child will need a copy of the Level A question booklet, a black-lead pencil to mark his or her answers and an eraser.

Presenting the Level A questions

When ready to start, ask the children to open their booklets and look at Question 1. If necessary, you should use a copy of the Level A booklet to demonstrate where Question 1 is on the page. The question text should then be read aloud from the Ezi-guide (*Question 1: 'Put a tick on the smallest star'*). If any of the children seem uncertain as to what to do, the instructions should be repeated, and further help and explanation should be given to make sure that they understand what to do.

Once Question 1 has been completed, move on to Question 2, first directing the children's attention to Question 2 (*for example 'Now let's look at Question 2', pointing, if necessary, to Question 2 in the booklet*). The question should then be read aloud from the Ezi-guide ('Put a tick on the picture with more things in it'). You should check to make sure that the children understand what to do and are marking their booklets in the correct place.

You should then proceed through the remainder of the questions in the booklet in the same way, reading each question aloud, and allowing sufficient time for all or most children to make a response. If necessary, use a copy of the Level A booklet to point to the particular question that is being worked on.

Concluding the assessment

At the conclusion of the *I can do maths* assessment the booklets should be collected and checked to ensure that the relevant information has been entered on the covers of the booklets. The children should be thanked for their efforts, and told that their answers will be of great help to you in planning future mathematics activities.

Level B procedures

Materials

You will need a copy of the Level B Ezi-guide from which to read the administration procedures and the text of the Level B questions.

Each child will need a copy of the Level B question booklet, a black-lead pencil to mark his or her answers, an eraser, and a ruler marked in centimetres to answer Question 25.

Presenting the Level B questions

When ready to start, ask the children to open their booklets and look at Question 1. If necessary, you should use a copy of the Level B booklet to demonstrate where Question 1 is on the page. The question text should then be read aloud from the Ezi-guide (Question 1: 'Put a tick on the rug that covers the largest area'). If any of the children seem uncertain as to what to do, the instructions should be repeated, and further help and explanation should be given to make sure that they understand what to do.

Once Question 1 has been completed, move on to Question 2, first directing the children's attention to Question 2 (for example *'Now let's look at Question 2'*, pointing, if necessary, to Question 2 in the booklet). The question should then be read aloud from the Ezi-guide (*'Put a tick beside the longer line'*). You should check to make sure that the children understand what to do and are marking their booklets in the correct place.

You should then proceed through the remainder of the questions in the booklet in the same way, reading each question aloud, and allowing sufficient time for all or most children to make a response. If necessary, use a copy of the Level B booklet to point to the particular question that is being worked on.

Concluding the assessment

At the conclusion of the *I can do maths* assessment the booklets should be collected and checked to ensure that the relevant information has been entered on the covers of the booklets. The children should be thanked for their efforts, and told that their answers will be of great help to you in planning future mathematics activities.

Scoring *I can do maths*

Each *I can do maths* question has a score space beside it. These spaces not only provide a place for the tick (or other mark) that indicates the correctness of a child's response, but they also denote the aspect of mathematics being assessed by the question since:

a number question is denoted by a hexagon (⬡)
a measurement question is denoted by a square (□)
a space question is denoted by a circle (○)

The correct answers to *I can do maths* questions are given below for each question booklet.

Level A Answers

-1- Left-most star.
-2- Lower picture.
-3- 10 cent coin.
-4- Second snake.
-5- Last snake.
-6- Second runner from right.
-7- 50 cent coin.
-8- 11.
-9- Upper left (triangle).
-10- Upper right (rectangle).
-11- 9.
-12- Centre shape.
-13- 4.
-14- Third figure from left (cone).
-15- Right-most figure (cylinder).
-16- Left-most figure (sphere).
-17- Left-most shape (square).
-18- 65.
-19- Last number sentence (7 + 3 = 10).
-20- Top right picture.
-21- Top left picture.
-22- 15 cents.
-23- Two more squares in apple row.
-24- Third clock (12:30).
-25- 19.
-26- Third number sentence (4 x 5 = 20).
-27- Second from left (circle).
-28- 17th of May.
-29- 15.
-30- 19.

Level B Answers

-1- Right-most rug.
-2- Lower line.
-3- 50 cent coin.
-4- Centre shape.
-5- Right-most shape (rectangle).
-6- 65.
-7- Second runner from right.
-8- Top right-hand shape.
-9- Left-most figure (sphere).
-10- Third figure from left (cone).
-11- Right-most figure (cylinder).
-12- 9.
-13- 4.
-14- Left-most shape (square).
-15- Top right picture.
-16- Top left picture.
-17- Third number sentence (8 – 3 = 5).
-18- Two more squares in apple row.
-19- 950.
-20- Second from left (circle).
-21- 15 cents.
-22- Third clock (12:30).
-23- 19.
-24- Third number sentence (4 x 5 = 20).
-25- Third line (10 centimetres).
-26- 17th of May.
-27- 23.
-28- 15.
-29- 44.
-30- 19.
-31- 43.
-32- 36.
-33- Any fraction greater than one-half.

Recording assessment levels

Photocopy masters for separate Level A and Level B *I can do maths* Assessment Records are contained at the back of this guide after page 27. These have spaces to record the results for up to 20 children.

The column for recording student results for each question is marked with the same symbol (○□○) as the question in the *I can do maths* question booklets. Columns are shaded as well to make counting across rows easier for calculating totals.

There is no best way of recording children's results; ticks, ticks and crosses, or even ones and zeros may be used. The only essential is that children's responses to each question can be read from the *I can do maths* Assessment Record as correct or incorrect.

Totals for Number, Measurement, Space and the overall total should be recorded as numbers in the appropriate columns at the right-hand side of the record sheet.

An example of a partly completed *I can do maths* Assessment Record is shown below.

I can do maths Assessment Record

Level A	Question number																												Totals			
Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	○	□	○	T
Peter	✔	✔	✔	✔	✔	✔		✔	✔		✔	✔	✔	✔	✔			✔		✔	✔		✔		✔		✔				8	6	5	19
Maria	✔	✔	✔	✔	✔			✔	✔	✔	✔	✔	✔	✔				✔		✔	✔		✔	✔	✔		✔				9	6	6	21
Molly	✔	✔	✔	✔	✔	✔		✔			✔	✔	✔			✔		✔		✔	✔		✔		✔		✔		✔		10	6	2	28

Interpreting *I can do maths* results

The purpose of *I can do maths* is to provide a picture of a child's numeracy development at the time of assessment. The child's responses to individual questions provide a picture of development when these scores are interpreted.

I can do maths data were collected from children from about four to eight years of age and in their first years of schooling. These data were analysed using a Rasch analysis that estimates the difficulty of obtaining higher scores; that is, it is not assumed that all questions are of equal difficulty or show the same 'amount' of development. This can be seen in the scales as uneven spacing between adjacent scores.

The four scales associated with *I can do maths* are:

- Number
- Measurement
- Space
- Total (the total of the three other scales)

These scales provide the basis for interpreting the scores of any child who has responded to the *I can do maths* questions. An *I can do maths* assessment provides three separate types of report, with each reporting on all four scales and each having a different emphasis.

The Individual Profile provides an overview of a child's performance in terms of scores, and a normative comparison of these scores with those of other children at various levels of schooling. These levels are fully explained in the section on Individual Profiles below.

A Diagnostic Map, as its name suggests, provides details of particular strengths or weaknesses that are revealed by a child's pattern of responses to *I can do maths* questions. Interpreting these patterns of response is facilitated by the mapping of questions onto the *I can do maths* scales within a Diagnostic Map, and its use is fully explained in the Diagnostic Map section below.

Individual Profile

A copy of the Individual Profile is needed for each child assessed, and the photocopy master for this is at the back of the guide. The child's name, age and the assessment date should be entered.

To record a child's position on a scale, the total of the child's level scores from the *I can do maths* Assessment Record Sheet should be marked with a cross or circle on the Individual Profile. Any comments about the assessment should be noted in the space provided.

An example of a completed Individual Profile is shown on the next page.

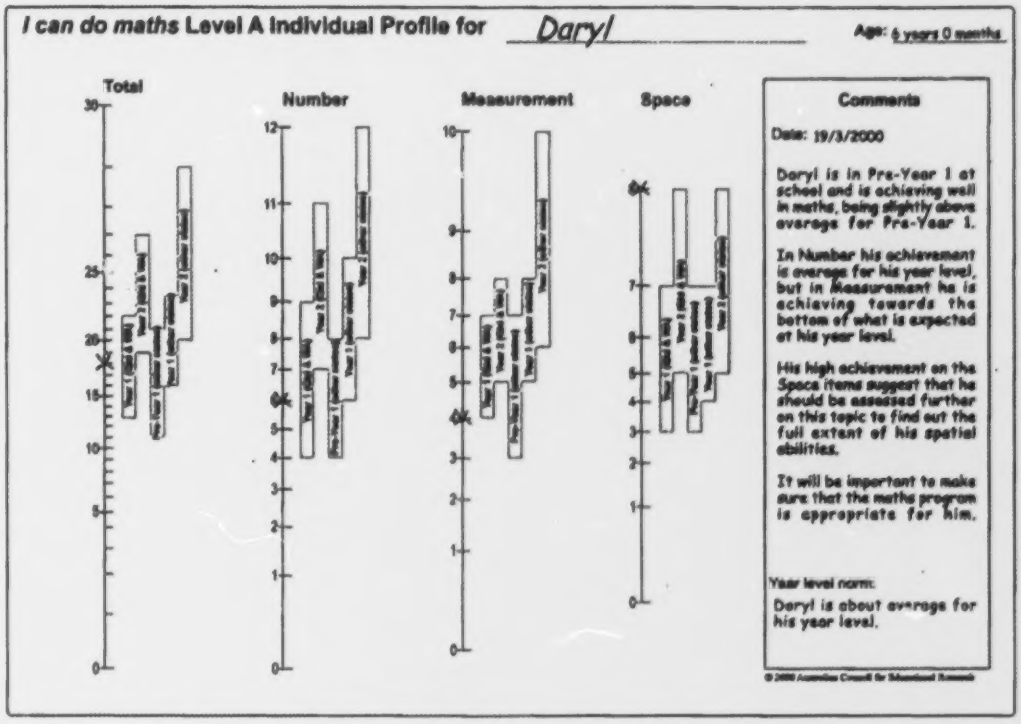
Interpreting achievement levels

An *I can do maths* Individual Profile not only provides a picture of actual achievement, but can be used to compare a child's score to an Australia-wide sample of children at the same level of schooling. These normative comparisons provide a guide to the performance expected of children at particular levels of schooling and allow for variation in performance between children stemming from individual differences. These norms allow teachers to determine where each child is in relation to other children in the class, as a basis for grouping children for different types of activities.

The shaded bands on the *I can do maths* Individual Profile show the expected range of scores for the middle 80 per cent of children in each of the following distinct school structures:

- Pre-Year 1 (ACT, NSW, Vic, SA, and NT)
- Year 1 (Qld, WA)
- Year 1 (ACT, NSW, Vic, SA, and NT)
- Year 2 (Qld, WA)
- Year 2 (ACT, NSW, Vic, SA, and NT)

(Tasmania did not participate in the study.)


I can do maths Level A Individual Profile for Daryl
Age: 6 years 0 months
Total
Number
Measurement
Space
Comments
Date: 19/3/2000
Daryl is in Pre-Year 1 at school and is achieving well in maths, being slightly above average for Pre-Year 1.
In Number his achievement is average for his year level, but in Measurement he is achieving towards the bottom of what is expected at his year level.
His high achievement on the Space items suggest that he should be assessed further on this topic to find out the full extent of his spatial abilities.
It will be important to make sure that the maths program is appropriate for him.
Year level norm:
Daryl is about average for his year level.

These separate bands make the normative comparisons more informative and precise. Children whose performance is outside the 80 per cent range, on either the Total score or a sub-scale, need further assessment using a wide range of techniques, including informal measures such as observation and parent interview to ascertain their particular strengths or weaknesses.

In the example provided, Daryl is achieving as expected. He is in Pre-Year 1 (not WA or Qld), but his overall score (18) puts his achievement slightly above average for students at the Pre-Year 1 level. His achievement in space (8) is comparable with that of high-achieving Year 2 children, while his number achievement (6), which is average for his year level, is similar to that of low-achieving Year 1 students. In measurement Daryl's score (4) is at the low end of the expected range for Pre-Year 1 students. The comment that he should be assessed further to determine the extent of his spatial abilities is clearly appropriate for Daryl.

School level norms

More detailed normative information is provided in the following tables of school level norms. These are based on the scores of the children in the original sample. Because of variations in school entry age and school structure in the early years of schooling across the different education systems, it was necessary to construct separate norms for children in different systems. The norms groups formed were for children in

- Year 1 (Qld, WA)
- Year 2 (Qld, WA)
- Pre-Year 1 (ACT, NSW, Vic, SA, and NT)
- Year 1 (ACT, NSW, Vic, SA, and NT)
- Year 2 (ACT, NSW, Vic, SA, and NT)

To use the norm tables below find the correct school level in the top row of the appropriate table (Level A or Level B) and look down that column to locate the row that corresponds to the child's total score.

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The columns at the extreme left of this row provide percentile level and stanine score. The descriptor corresponding to this raw score is also in this row. These details should be recorded in the Comments section of the child's *I can do maths* Individual Profile.

In the sample Individual Profile for Daryl, a score of 18 puts him in the average category for a Pre-Year 1 (not WA or Qld) child.

Score ranges for *I can do maths* Level A school level norms

%ile	Stanine	Description	% in this category	Year 1 (Qld, WA)	Year 2 (Qld, WA)	Pre-Year 1 (other states)	Year 1 (other states)	Year 2 (other states)
96+	9	Well above average	4	25+	29+	23+	26+	30
89–95	8	Above	7	23–24	28	22	25	29
77–88	7	average	12	21–22	26–27	20–21	24	28
60–76	6		17	20	25	18–19	22–23	27
40–59	5	Average	20	18–19	23–24	16–17	21	25–26
23–39	4		17	16–17	21–22	14–15	19–20	23–24
11–22	3	Below	12	13–15	19–20	11–13	17–18	20–22
4–10	2	average	7	10–12	17–18	9–10	14–16	17–19
1–3	1	Well below average	4	<10	<17	<9	<14	<17

Score ranges for *I can do maths* Level B school level norms

%ile	Stanine	Description	% in this category	Year 1 (Qld, WA)	Year 2 (Qld, WA)	Pre-Year 1 (other states)	Year 1 (other states)	Year 2 (other states)
96+	9	Well above average	4	21+	29+	20+	23+	31+
89–95	8	Above	7	19–20	27–28	18–19	22	30
77–88	7	average	12	18	25–26	16–17	20–21	28–29
60–76	6		17	16–17	23–24	15	19	26–27
40–59	5	Average	20	14–15	21–22	13–14	17–18	24–25
23–39	4		17	12–13	19–20	11–12	15–16	21–23
11–22	3	Below	12	10–11	16–18	8–10	13–14	18–20
4–10	2	average	7	7–9	13–15	6–7	11–12	15–17
1–3	1	Well below average	4	<9	<13	<5	<11	<15

Diagnostic Maps

More detailed information about children's development in mathematics is available by using the *I can do maths* Diagnostic Maps (Diamap). You need a copy of the appropriate Level A or B of the *I can do maths* Diagnostic Map for each child. Personal details should be completed for each child. The photocopy masters for the *I can do maths* Diagnostic Maps (Level A and Level B) are at the back of this guide.

Each *I can do maths* Diamap has been constructed so that a child's total score can indicate the expected pattern of responses (that is, what success the child is expected to have on each task). Variations from the expected pattern provide starting points for planning to meet an individual child's needs.

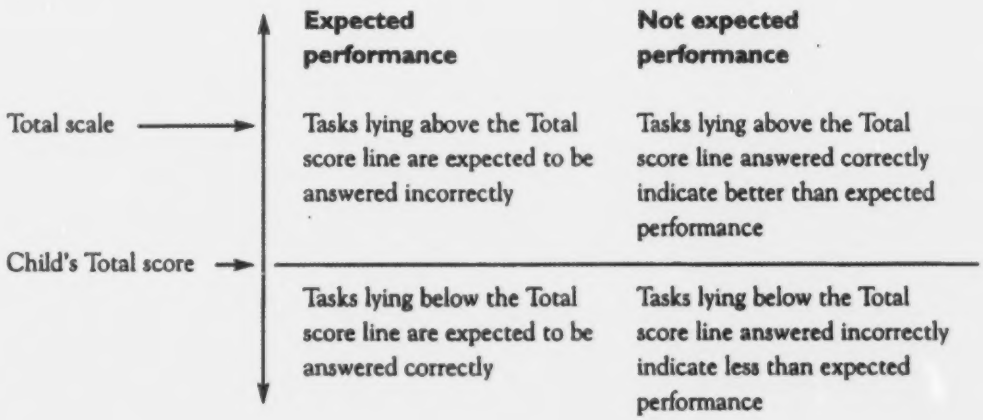
To use an *I can do maths* Diamap, draw a line across it at the child's Total score level. Now mark (by circling or highlighting) each *I can do maths* task that the child had correct. Some of these marked tasks may be above the Total score line and some below it.

Once the Total score line has been drawn and each task marked, there are four conditions of diagnostic interest represented:

- tasks that are expected to be correct and are correct
- tasks that are expected to be correct and are not correct
- tasks that are not expected to be correct and are correct
- tasks that are not expected to be correct and are not correct.

These four conditions are shown in the diagram below. Note that there are two conditions above the child's score line and two below it. In each section there is an expected and an un-expected condition.

The *I can do maths* Diamaps are constructed so that questions that lie above a child's Total score line are expected to be easy for them, while those above the line are expected to be too difficult. In other words, the further a question is below the line, the more likely it is that the child will answer correctly, and the further above the line, the less likely it is that the child will answer correctly.


Expected performance
Not expected performance
Total scale
Tasks lying above the Total score line are expected to be answered incorrectly
Tasks lying above the Total score line answered correctly indicate better than expected performance
Child's Total score
Tasks lying below the Total score line are expected to be answered correctly
Tasks lying below the Total score line answered incorrectly indicate less than expected performance

Specific strengths are shown by correctly answered questions above the Total score line. When these questions are within a particular curriculum area, such as Measurement, then this may indicate a general strength in that area. Individual questions, on the other hand, may reveal particular strengths within an area. For example, there may be a particular strength in simple addition within number, but not strength in number more generally.

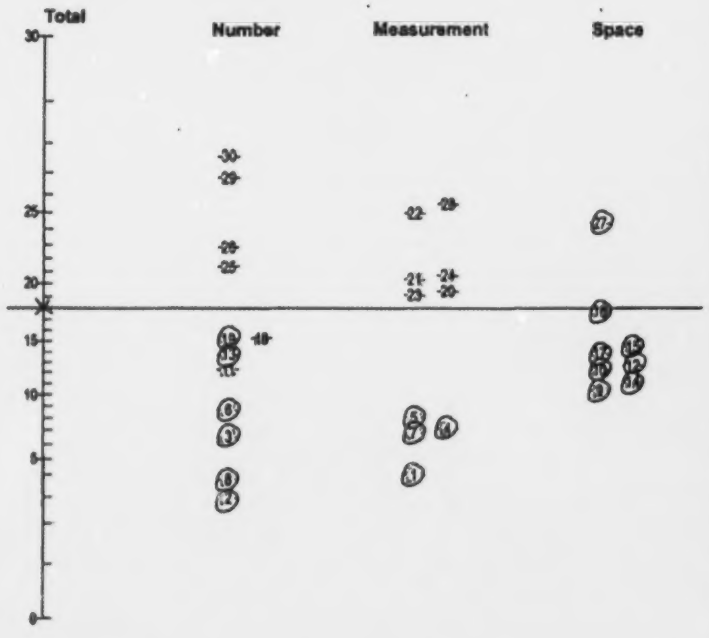
Specific weaknesses are shown by questions answered incorrectly lying below a child's Total score line. Again, when these questions are within a particular curriculum area, such as Space, then this may indicate a general weakness in that area. Individual questions, on the other hand, may reveal particular weaknesses within an area. For example, there may be a particular weakness in money within Measurement, but not in Measurement more generally.

When interpreting a Diamap it must be remembered that it is a consistent pattern of strength or weakness that should be taken as an indicator for further investigation and assessment. Random inconsistencies in children's patterns of response are expected and should be interpreted with caution.

An example of a completed Diamap, for Daryl, is below. Daryl was a six-year-old when assessed mid-year in his Northern Territory Transition (Pre-Year 1) class. The Diamap 'score line' shows a reasonably clear distinction between questions that he could and could not answer successfully, a pattern expected in most Diamaps.

The Number questions below the score line (expected to be easy for Daryl) he has all correct except questions 11 and 18. Question 11 is a simple addition problem, and question 18 asked him to identify the number 65.

I can do maths **Level A Diagnostic Map for** *Daryl* **Age:** *6 years 0 months*



Comments

Date: 19/1/2000

Daryl has succeeded with all Number questions not involving a knowledge of arithmetic processes. These questions (11, 18, 25, 26, 29, and 30) require either knowledge of formal symbols and their meanings or an understanding of numbers as more than a counting system.

In Measurement Daryl again has succeeded with all questions except those involving formal knowledge (for example, calendars, clock time). However, his difficulty with 'first' and 'last' events is quite different and is a concern.

His perfect achievement on the Space questions suggests that he should be assessed further on this topic to find out the full extent of his spatial abilities.

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Daryl has had no success with the Number questions above the score line (expected to be too difficult for him). All these questions require a knowledge or awareness of numbers as operators rather than simply a counting mechanism.

Daryl's Measurement successes all lie below his score line as expected. Those questions above the score line (expected to be too hard for him) were too difficult. Four of these questions require knowledge of mathematics conventions. Questions 24 and 28 focus on time, while question 21 deals with money (giving change) and question 23 deals with reading a simple graph.

Daryl's achievement on spatial questions is excellent, and well beyond what is expected of a child with his overall score. As suggested earlier in comments on his Individual Profile, more assessment to gauge the full extent of his spatial abilities is needed.

The overall picture is of a child well-skilled in counting and measurement, but not as yet familiar with the conventions of mathematics that enable success with more formal work. For a child at mid-year in a Transition (Pre-Year 1) class, the most likely reason is that of curriculum timing. Daryl's Diamap alerts us to a possible problem with 'first' and 'last', but more importantly shows that a score alone does not provide a complete picture of a child's abilities. In Daryl's case, his Number score of 6 out of 12 and Measurement score of 4 out of 10 fail to identify his underlying strengths, and also fail to provide suggestions for future learning programs.

Descriptive Reports

Descriptive Reports form a valuable part of the *I can do maths* support for teachers, whether these are used in reporting to parents, program planning, or for ability grouping purposes. By using the child's Total score, these reports combine the information of the Diamaps with descriptions of the *I can do maths* questions.

A Descriptive Report is created by marking the child's Total score on the appropriate score scale (Level A or Level B). If desired, a line can be drawn across the report at the score level as shown in the example that follows.

The *I can do maths* Descriptive Report is interpreted in a similar manner to an *I can do maths* Diamap. The abilities listed below a child's score line are typically achieved by children with the marked total score. Where there is more than one level of ability described, the higher description (on the report page) supersedes the lower description. For example, in Number the description 'solve addition and subtraction problems with larger numbers' supersedes 'solve problems with numbers less than 10'.

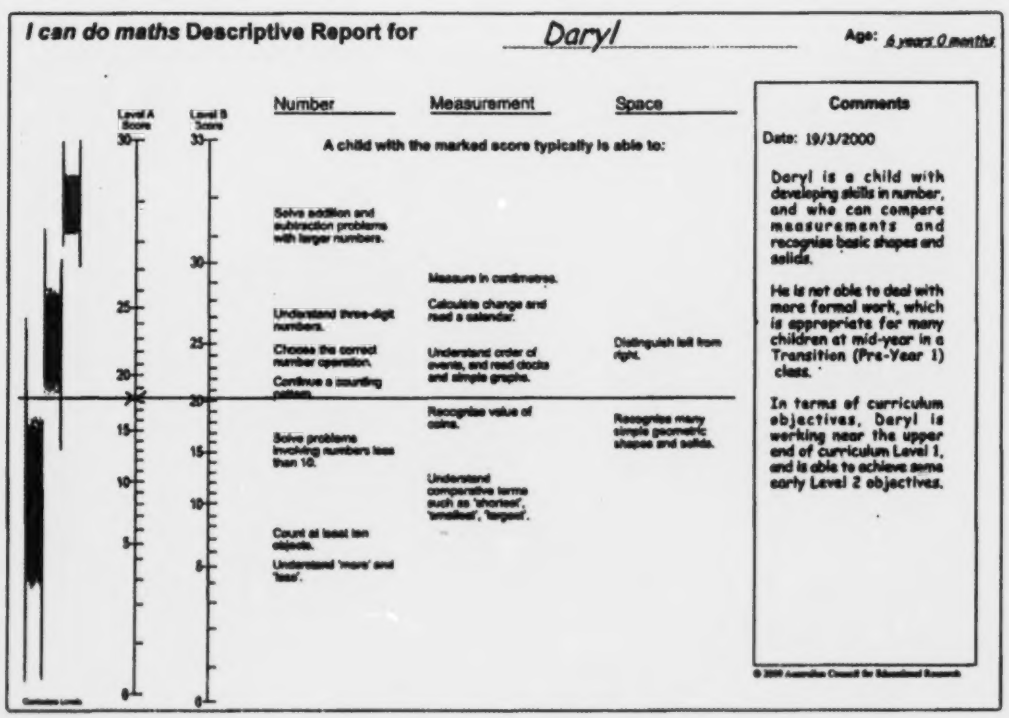
Descriptions close to or on the score line may apply to an individual child, but care must be exercised when interpreting these particular descriptions. In the example given for Daryl, the description 'continue a counting pattern' may apply, but it would be sensible to check his test booklet before using the report.

At the extreme left side of the Descriptive Report are the curriculum levels covered by the *I can do maths* items. The objectives covered by the two *I can do maths* tests are from Curriculum Levels 1, 2 and the beginning of Level 3. More detail on the objectives may be found in the curriculum documents themselves.

The *I can do maths* Descriptive Report for Daryl shows a child with developing skills in number, and who is able to compare measurements and recognise basic shapes and solids. He is not yet able to deal with more formal work, which is appropriate for many children at mid-year in a Transition (Pre-Year 1) class. In terms of curriculum objectives, Daryl is working near the upper end of Curriculum Level 1, and is able to achieve some early Level 2 objectives.

Planning

Assessment of any kind raises the question 'What do I do now?' and *I can do maths* is no exception. However, in the case of *I can do maths* this question is answered by the provision of diagnostic reports (Diamaps) and descriptive reports. These reports provide detailed information about children's abilities, skills, strengths and weaknesses in those areas assessed by the Level A and Level B questions. The detail that they provide gives clear guidance for planning further learning experiences for those children assessed. However, where the *I can do maths* assessment appears not to provide clear guidance, other formal and informal assessment strategies should be used. These include clinical interviews, observation, and other formal assessment instruments.


I can do maths Descriptive Report for Daryl
Age: 6 years 0 months
Number
Measurement
Space
A child with the marked score typically is able to:
Solve addition and subtraction problems with larger numbers.
Understand three-digit numbers.
Choose the correct number operation.
Continue a counting pattern.
Solve problems involving numbers less than 10.
Count at least ten objects.
Understand 'more' and 'less'.
Measure in centimetres.
Calculate change and read a calendar.
Understand order of events, and read clocks and simple graphs.
Recognise value of coins.
Understand comparative terms such as 'shortest', 'smallest', 'largest'.
Distinguish left from right.
Recognise many simple geometric shapes and solids.
Comments
Date: 19/3/2000
Daryl is a child with developing skills in number, and who can compare measurements and recognise basic shapes and solids.
He is not able to deal with more formal work, which is appropriate for many children at mid-year in a Transition (Pre-Year 1) class.
In terms of curriculum objectives, Daryl is working near the upper end of curriculum Level 1, and is able to achieve some early Level 2 objectives.

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Development of *I can do maths*

Rationale

I can do maths was developed for use in the ACER Project on *Curriculum and Organisation in the Early Years of School* (1997–1999). This study was designed to examine the relationship between age of entry to school, school structure, curriculum, teacher expectation and student outcomes in the early years of schooling. For the purposes of this study it was necessary to have a measure of early numeracy progress that was applicable to children throughout the early years of schooling, and that was easy to administer and score.

Cost limitations of the study excluded the use of individually administered instruments based on an expensive kit of materials. It was also not feasible, in the context of this study, to rely on measures based on teacher observations over an extended period of time, or on observation and recording of teacher-initiated classroom activities. As no suitable instrument meeting these criteria could be found, it was necessary to develop a measure specifically for use in this study.

The *I can do maths* instrument developed for use in the research study contained a total of 47 questions designed to assess key learning objectives in the early years of schooling, as outlined in the various state and national documents on mathematics curriculum and objectives. These items covered the three main areas of number, measurement and shape. The 47 items included were selected from an initial pool of items trialled on a pilot sample of about 150 children. Because the questions were designed to cover a fairly wide age and ability range (Pre-Year 1 to Year 2), it was necessary to include questions that were relatively easy for children in their first year of school, as well as more difficult questions that were able to discriminate at the Year 2 level. However, since these questions were considered too difficult for Pre-Year 1 and Year 1 children, the set of questions was divided into two levels, such that the second level (questions 39 to 47) was administered only to children at Year 2.

The 47 questions included in the research version of *I can do maths* were subsequently used to develop two levels of *I can do maths*: Level A, suitable for children in their first and second years of schooling, and Level B, suitable for children in their second and third years of schooling.

The sample

All the data on *I can do maths* reported in this guide were collected from the sample of schools and children participating in the ACER study. The children came from 84 schools, selected at random from seven of the eight states and territories.

The sampling was designed to obtain an equal number of schools from each of the participating states and territories, but the actual number of schools from each varied from 6 to 15. While not proportionally representative in terms of state representation, the sample covered a wide range of schools and included children drawn from different backgrounds throughout Australia.

From each of the participating schools, one class at each of the relevant year levels (Pre-Year 1 to Year 2) was selected. This provided a total sample of over 3000 children, with more than 800 children at the Pre-Year 1 level and over a thousand children at the Year 1 and Year 2 levels.

Data on *I can do maths*

I can do maths was administered at the end of the second school term (June 1998), or in some cases at the beginning of the third school term (July/August 1998) to all the Pre-Year 1 to Year 2 children participating in the study. At the same time the children were assessed on a measure of developmental level *(Who Am I?)*, and on a measure of early literacy skills *(Literacy Baseline* test at Pre-Year 1 and Year 1, and *Reading Progress Test* 1 at Year 2).

Scoring of *I can do maths*

Responses to the *I can do maths* questions were scored as correct or incorrect according to the assessment criteria described in this guide. The total number of correct responses provided the total score used as the measure of early numeracy development.

For the development of *I can do maths*, children's responses on the questions included in Level A provided the score for Level A, and similarly for the Level B score. These scores were then used as the basis for the construction of the school level norms for each Level of *I can do maths* , as reported in this guide.

Reliability of *I can do maths*

The reliability of an assessment instrument is a measure of the consistency with which the same results would be obtained by repeated measures using the same instrument. In the case of *I can do maths* the estimate of reliability provided by a Quest analysis (Adams & Khoo, 1996) was 0.91, which indicates a high level of internal consistency for these questions.

Measures of internal consistency (KR-21) are also reported for each of the norm group samples. These measures were obtained from the Normit program used to generate the norm tables. The KR-21 estimates of reliability produced by this program are somewhat lower than those produced by the Quest analysis because these estimates are based on sub-samples of the total group. The estimate of reliability produced by the Quest analysis, which is based on the total sample, therefore provides a better measure of the overall reliability of *I can do maths*.

Validity of *I can do maths*

Validity is a measure of the extent to which a test or instrument measures the behaviours or skills it is intended to measure. Three types of validity are reported for *I can do maths*: content validity, construct validity and criterion-related validity.

Content validity refers to the extent to which the items in a test are representative of the area the test is supposed to be measuring. In the case of *I can do maths* the questions focus on key learning objectives of the mathematics curriculum in the early years of schooling, and in particular are linked to the objectives in the national Profiles in Mathematics (AEC, 1994). The tables below show the focus of each *I can do maths* question in terms of mathematics curriculum strand and level, as defined in the mathematics profiles.

Relationship between mathematics curriculum and *I can do maths* Level A questions

Curriculum strand	Curriculum Level	Question number	Question
Number	1	2	Put a ✔ on the picture with more things in it.
Number	1	3	Put a ✔ under the 10 cent coin.
Number	1	6	Put a ✔ under the runner who is second in the race.
Number	1	8	Count how many butterflies there are in this picture.
Number	1	11	Tom had 5 gumnuts and found 4 more. How many gumnuts does he have now?
Number	1	13	Jan had 6 lollies and ate 2 of them.
Number	2	18	Put a ✔ on the number sixty-five.
Number	2	19	Put a ✔ beside the number sentence that matches the picture.
Number	2	25	Write the next number in the counting pattern.
Number	2	26	Put a ✔ beside the number sentence that matches the picture.
Number	2	29	Con had 24 marbles in his bag. Nine marbles fell out of the bag. Write how many marbles are left in the bag.
Number	2	30	Jill has 36 pencils in her pencil-case. She put 17 pencils on the table. Write how many pencils are in the pencil-case now.
Measurement	1	1	Put a ✔ on the smallest star.
Measurement	1	4	Put a ✔ on the longest snake.
Measurement	1	5	Put a ✖ on the shortest snake.
Measurement	1	7	Put a ✔ under the coin you need to buy the pencil.
Measurement	1	20	Put a ✔ on the picture that shows the first thing to happen.
Measurement	1	21	Put a ✖ on the picture that shows the last thing to happen.
Measurement	2	22	Rosa has $1. She buys some fruit for 85 cents. Put a ✔ on how much change she gets.
Measurement	2	23	A group of children ate some fruit. Colour squares on the graph to show ...
Measurement	2	28	Circle the third Wednesday of May on this calendar.
Measurement	3	24	Put a ✔ beside the clock that shows twelve-thirty.
Space	1	9	Put a ✔ under the triangle shape.
Space	1	10	Put a ✖ on the rectangle shape.
Space	1	15	Put a ✖ on the cylinder.
Space	1	27	Put a ✔ on the shape at the left of the square.
Space	2	12	Put a ✔ on the shape with all curved sides.
Space	2	14	Put a ✔ on the cone.
Space	2	16	Colour in the sphere.
Space	2	17	Put a ✔ on the shape that makes the side of the cube.

Relationship between mathematics curriculum and *I can do maths* Level B questions

Curriculum strand	Curriculum Level	Question number	Question
Number	1	7	Put a ✔ on the runner who is second in the race.
Number	1	12	Tom had 5 gumnuts and found 4 more. How many gumnuts does he have now?
Number	1	13	Jan had 6 lollies and ate 2 of them. How many lollies are left now?
Number	2	6	Put a ✔ on the number sixty-five.
Number	2	17	Put a ✔ beside the number sentence that matches the story. How many ducks on the pond now?
Number	2	19	Put a ✔ beside the number nine hundred and fifty.
Number	2	23	Write the next number in the counting pattern.
Number	2	24	Put a ✔ beside the number sentence that matches the picture.
Number	2	27	Write the answer to this problem. 37 – 14 =
Number	2	28	Con had 24 marbles in his bag. Nine marbles fell out of the bag. Write how many marbles are left in the bag.
Number	2	29	Write the answer to this problem. 14 + 31 =
Number	2	30	Jill has 36 pencils in her pencil-case. She put 17 pencils on the table. Write how many pencils are in the pencil-case now.
Number	2	31	Write the answer to this problem. 25 + 18 =
Number	2	32	Write the answer to this problem. 53 – 17 =
Number	3	33	Write a fraction that is bigger than 1/2.
Measurement	1	2	Put a ✔ beside the longer line.
Measurement	1	3	Put a ✔ under the coin you need to buy the pencil.
Measurement	1	15	Put a ✔ on the picture that shows the first thing to happen.
Measurement	1	16	Put a ✖ on the picture that shows the last thing to happen.
Measurement	2	18	A group of children ate some fruit. Colour squares on the graph to show …
Measurement	2	21	Rosa has $1. She buys some fruit for 85 cents. Put a ✔ on how much change she gets.
Measurement	2	26	Circle the third Wednesday of May on this calendar.
Measurement	3	1	Put a ✔ on the rug that covers the largest area.
Measurement	3	22	Put a ✔ beside the clock that shows twelve-thirty.
Measurement	3	25	Use your ruler to measure the lines. Put a ✔ on the line that is 10 centimetres.
Space	1	8	Put a ✖ on the rectangle shape.
Space	1	9	Colour in the sphere.
Space	1	20	Put a ✔ on the shape at the left of the square.
Space	2	4	Put a ✔ on the shape with all curved sides.
Space	2	5	Put a ✖ on the shape with all straight sides.
Space	2	10	Put a ✔ on the cone.
Space	2	11	Put a ✖ on the cylinder.
Space	2	14	Put a ✔ on the shape that makes the side of the cube.

Construct validity refers to the extent to which a test is a measure of the underlying construct that it is intended to assess. Construct validity is usually not based on a single measure, but on an accumulation of evidence relating to the test and what it measures. Such evidence would include correlational studies with other relevant measures, studies of changes in performance over time, and studies of the underlying pattern of relationships between the items of the test and how these relate to the growth of mathematical knowledge and understanding.

Evidence of construct validity for *I can do maths* comes from the data which show developmental trends over time, as well as from data on the relationship between the mathematical concepts underlying children's knowledge and understanding of number, measurement and space. Evidence of developmental progression is indicated by the increase in mean score according to both age and school level, as indicated in the tables of basic statistics provided on page 25, and evidence of the links between the development of concepts in number, measurement and space are shown in the *I can do maths* Diagnostic Map.

Criterion-related validity refers to the extent to which the assessment relates to some external criterion of what the measure is intended to be associated with or to predict. In the case of *I can do maths*, criterion-related validity in terms of correlations with other measures of early mathematics or subsequent achievement in mathematics is not available. However, data from the study provide some evidence of the relationship between performance on *I can do maths* and the measures of early literacy and developmental level that were administered. These were the *Literacy Baseline Test* and *Reading Progress Tests 1 and 2* from the *Reading Progress Test series* (Vincent, Crumpler & East London Assessment Group, 1996) and Who Am I? (de Lemos and Doig, 1999). Correlations between scores on *I can do maths*, administered in the middle of the school year, and teacher assessments of school progress, at the end of the school year, are also available. These correlations are shown in the table below.

Correlations between *I can do maths* and measures of early literacy & school progress

	Level A			Level B			Research Version
	Pre-Year 1	Year 1	Year 2	Pre-Year 1	Year 1	Year 2	Both Levels
Measures of Early Literacy							
Literacy Baseline (June/July)	.61	.57	-	.58	.57	-	.65
Reading Progress Test 1 (November)	.30	.43	-	.30	.43	-	.51
Reading Progress Test 1 (June/July)	-	-	.51	-	-	.56	.53
Reading Progress Test 2 (November)	-	-	.54	-	-	.58	.52
Measure of Development Level							
Who Am I? (June/July)	.55	.48	.37	.52	.48	.41	.70
Teacher Assessment of Progress at School	.45	.37	.46	.43	.39	.49	.38

Note: All correlations reported are significant at the .01 level.

From this table it can be seen that there is a moderate correlation between *I can do maths* and the *Literacy Baseline* test, administered to the Pre-Year 1 and Year 1 children at the same time (.57 to .65), and also between *I can do maths* and *Reading Progress Tests 1 and 2*, administered to the Year 2 children in June/July *(Reading Progress Test 1)* and in November *(Reading Progress 2)*. The correlation between *I can do maths* and *Reading Progress Test 1*, administered at the end of the school year to children at the Pre-Year 1 and Year 1 level, is generally lower, particularly at the Pre-Year 1 level (.30). This low correlation can be attributed to the fact that *Reading Progress Test 1* did not discriminate well at this level, since it was found to be too difficult, particularly at the Pre-Year 1 level, where relatively few children scored above chance level.

The correlation between *I can do maths* and the measure of developmental level, *Who Am I?*, was also moderate, being higher for the younger children, where *Who Am I?* was more discriminating, than for the older children, where it was reaching a ceiling. Correlations between scores on *I can do maths* and the teacher assessments of school progress were also generally moderate, ranging from .37 to .49.

I can do maths norm groups

Basic statistics for each of the groups that were used for the construction of norms are shown in the following tables. The norms are based on the total sample of children at each of the five school levels distinguished. These school levels are identified on the basis of the specific education system and year of schooling.

For each norm group, the tables show the total number of children in the group (N), the mean total score of the group, the standard deviation of the mean, and the standard error of measurement, which may be used to calculate the range of scores within which the 'true score' is likely to fall, and the reliability of the score (KR-21), which is a measure of the internal consistency of the tasks.

Basic statistics for norm groups: Level A

School level group	Mean age	N	Mean	SD	SEM	KR-21
Pre-Year 1						
(ACT, NSW, Vic, SA, and NT)	5:9	887	16.4	4.1	2.7	0.58
Year 1 (Qld, WA)	6:1	383	17.9	3.9	2.6	0.53
Year 1 (ACT, NSW, Vic, SA, and NT)	6:9	910	20.4	3.6	2.5	0.50
Year 2 (Qld, WA)	7:1	341	23.0	3.5	2.3	0.58
Year 2 (ACT, NSW, Vic, SA, and NT)	7:9	906	24.7	3.6	2.0	0.68

Basic statistics for norm groups: Level B

School level group	Mean age	N	Mean	SD	SEM	KR-21
Pre-Year 1						
(ACT, NSW, Vic, SA, and NT)	5:9	887	12.9	3.7	2.8	0.45
Year 1 (Qld, WA)	6:1	383	14.2	3.8	2.8	0.45
Year 1 (ACT, NSW, Vic, SA, and NT)	6:9	910	17.0	3.6	2.9	0.52
Year 2 (Qld, WA)	7:1	341	21.3	4.3	2.7	0.62
Year 2 (ACT, NSW, Vic, SA, and NT)	7:9	906	23.9	4.7	2.5	0.72

As has been noted, Tasmania did not participate in the ACER study on Curriculum and Organisation in the Early Years of School, and therefore there is no data on children in Tasmania.

In terms of school structure, Tasmania is comparable to states such as NSW and Victoria that have a Pre-Year 1 year. However, because of differences in the cut-off date for entry to school, children in Tasmania are four to seven months older than children at comparable levels in NSW and Victoria. Children at the Pre-Year 1 level in Tasmania are therefore more comparable, in terms of age, to children in Year 1 in Queensland and Western Australia than to children at the Pre-Year 1 level in the other states. This difference in age also applies to Tasmanian children in Year 1 and Year 2. This age difference would need to be considered when applying these norm tables in Tasmania.

The norms provided are based on Australian children, but can probably be regarded as indicative of developmental progress in cultures that are similar to Australia in background and schooling. In New Zealand the school system is similar to the system in South Australia and the Northern Territory, where children are eligible to enter school at age five, and where enrolment is on a continuous basis throughout the school year.

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Your notes

Your notes

Photocopy masters

I CAN DO MATHS ASSESSMENT RECORD

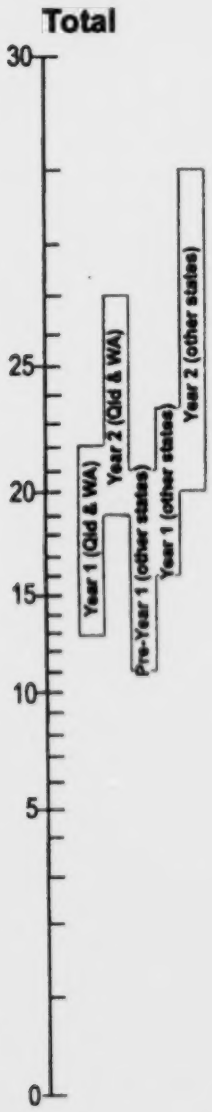
Level A	Question number																													Totals			
Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	○	□	○	T

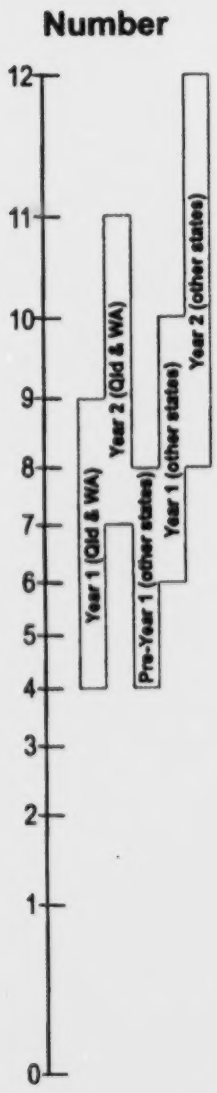
I CAN DO MATHS ASSESSMENT RECORD

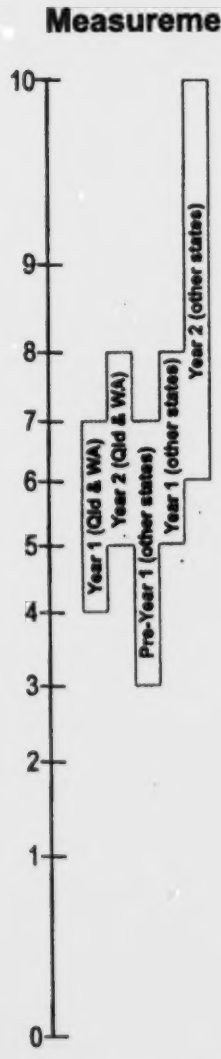
Level B

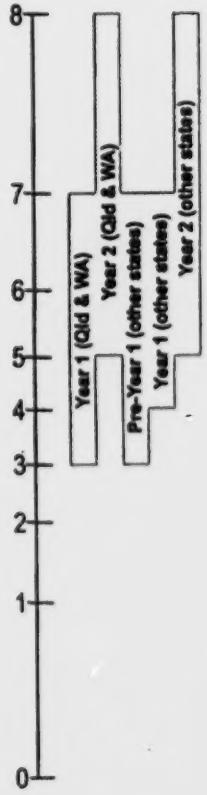
Name	Question number																															Totals			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	⬡	□	○	T

I can do maths Level A Individual Profile for _____ Age: _____









Comments

Date:

Year-level norm:

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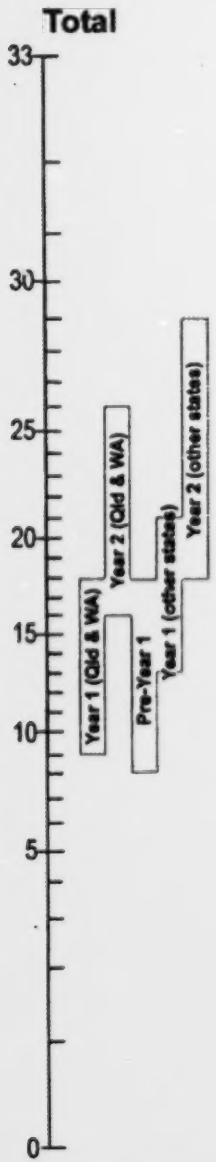
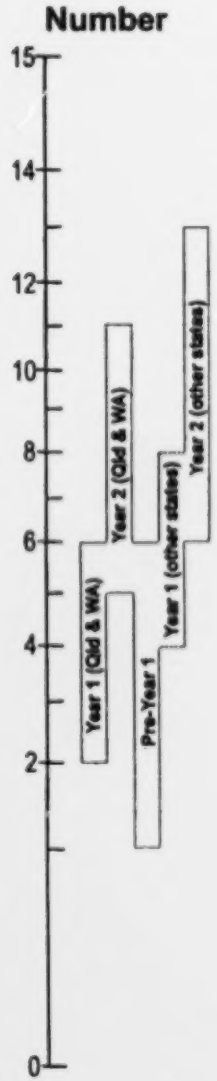
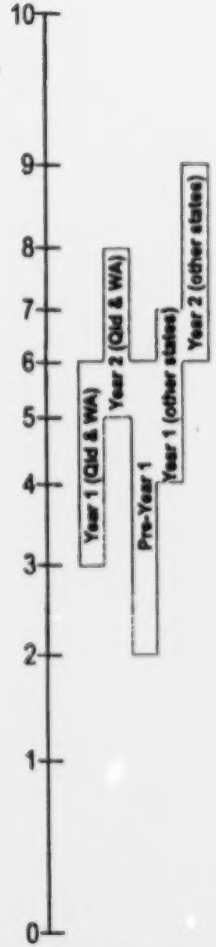
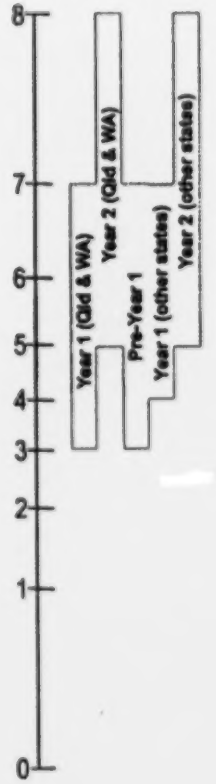
I can do maths Level B Individual Profile for _____ Age: _____









Comments

Date:

Year-level norm:

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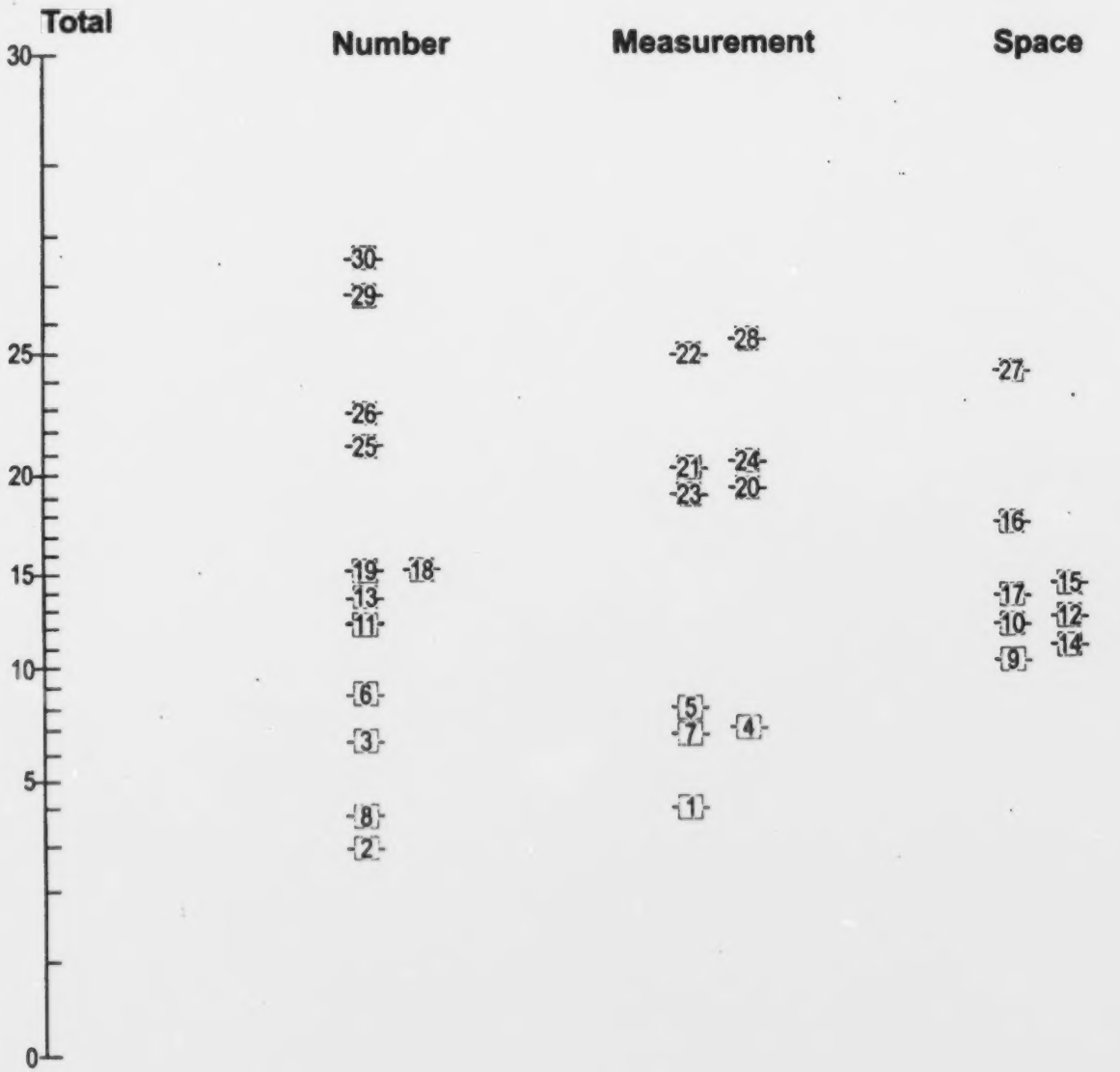
I can do maths Level A Diagnostic Map for _____ Age: _____



Comments

Date:

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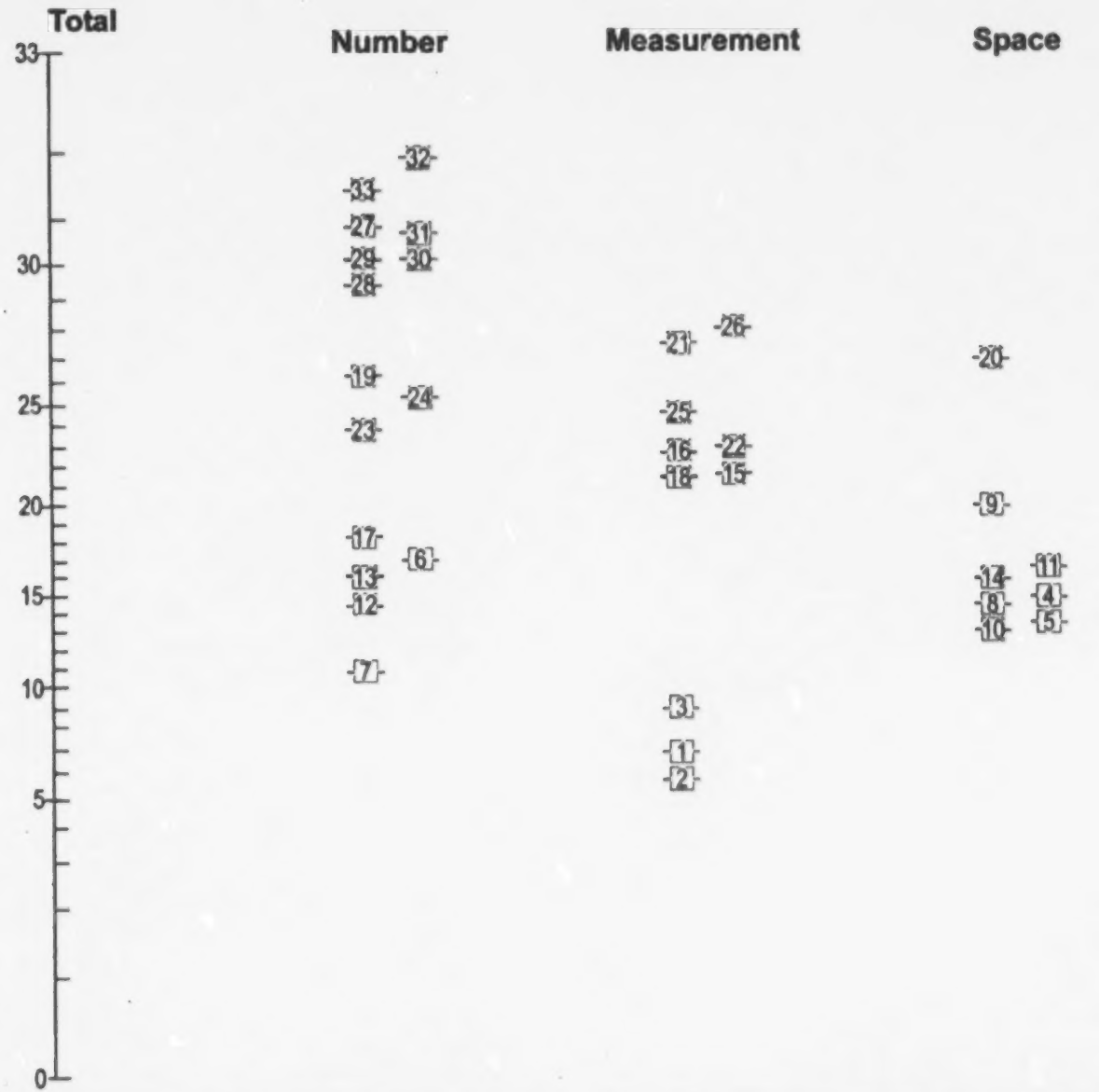
I can do maths Level B Diagnostic Map for _____ Age: _____



Comments

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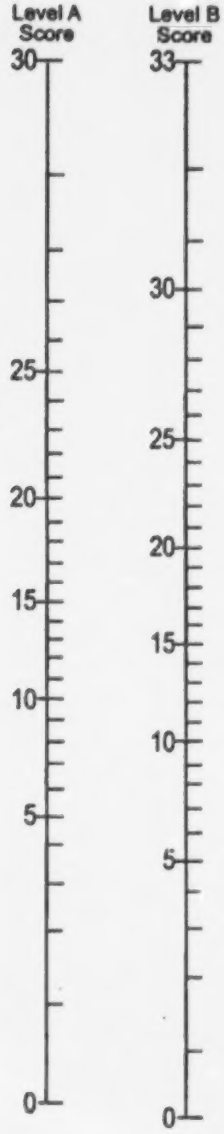
I can do maths Descriptive Report for _____ Age: _____



Number	Measurement	Space

A child with the marked score typically is able to:

Solve addition and subtraction problems with larger numbers.

Measure in centimetres.

Calculate change and read a calendar.

Understand three-digit numbers.

Distinguish left from right.

Choose the correct number operation.

Understand order of events, and read clocks and simple graphs.

Continue a counting pattern.

Recognise value of coins.

Recognise many simple geometric shapes and solids.

Solve problems involving numbers less than 10.

Understand comparative terms such as 'shortest', 'smallest', 'largest'.

Count at least ten objects.

Understand 'more' and 'less'.

Comments

Date:

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Ezi-guide to

I can do maths

Level A

General information

- ❑ *I can do maths* is un-timed, but will take about 30 to 40 minutes.
- ❑ Sufficient time should be allowed for all or most children to complete each question.
- ❑ If children are working slowly, or seem to be tiring, a short break in the middle of the *I can do maths* session should be taken.
- ❑ *I can do maths* may be administered either individually or in a group; for children in their first year of school, groups of up to 10 or 15 children are recommended and for children in later years of schooling, it should be possible to administer *I can do maths* to a whole class group.
- ❑ *I can do maths* should be presented as part of regular class activity rather than as a 'test', but without compromising the necessary standardised administration procedures.
- ❑ Children should be told of the purpose of *I can do maths* in terms that they can understand (e.g. as a means of finding out what the class has learned and as a guide to the teacher).
- ❑ Each question must be read aloud to the group so that performance is not dependent on reading ability.
- ❑ Responses to children's questions should provide no additional help or prompting.

Preparation for the *I can do maths* session

- ❑ You will need a copy of the Ezi-guide and an *I can do maths* booklet.
- ❑ The children will require an *I can do maths* booklet, a black-lead pencil to mark their answers and an eraser.
- ❑ Children should be seated comfortably at tables or desks, with sufficient space between to ensure that a child cannot copy from a child seated nearby.
- ❑ The room should be well lit and ventilated, and any distracting material should be removed from where the children are seated.

Beginning an *I can do maths* session

The information sections on the back cover of the *I can do maths* booklet should be completed by either yourself or the children as appropriate. Children should be given as much help as necessary if they are completing this part of the booklet.

Introduction for the children

Before starting the *I can do maths* questions, the following general points should be made to the children, although the wording may be varied to suit the particular group:

- ❑ Today we are going to do some questions about shapes and numbers.
- ❑ I will read all the questions to you.
- ❑ You will have plenty of time to do the questions.
- ❑ Some of the questions are easy, and some are harder. Don't worry if you can't answer a question. Just do the best you can.
- ❑ Mark your answers on the booklet. If you make a mistake, cross (or rub) it out neatly and write your new answer.
- ❑ You may write on the booklet for rough work (working out).
- ❑ If you have a question, put up your hand. I will help you, but I won't tell you the answer.

Finishing an *I can do maths* session

At the end of an *I can do maths* session the children should be thanked and the booklets checked to ensure that the relevant information has been entered in the information sections of the covers of the booklets.

Ezi-guide to

I can do maths

Level A

Administering *I can do maths*

Ask the children to open their test booklets and look at Question 1. If necessary, use your own booklet to show where Question 1 is on the page. The question should then be read aloud. If any of the children seem uncertain as to what to do, the instructions should be repeated, and further help and explanation given to make sure that they understand what is required.

Children should be encouraged to make a response rather than to leave the answer out (do the best you can, have a go, just put what you think the answer is most likely to be).

Proceed through the remaining *I can do maths* questions in the same way. Allow sufficient time for all or most children to make a response before moving on to the next question. If necessary, use your own booklet to point to the particular question that is being worked on.

The text for all questions is below.

---

1 Put a ✔ on the smallest star.

2 Put a ✔ on the picture with more things in it.

3 Put a ✔ under the 10 cent coin.

4 Put a ✔ on the longest snake.

5 Put a ✖ on the shortest snake.

6 Put a ✔ under the runner who is second in the race.

7 Put a ✔ under the coin you need to buy the pencil.

8 Count how many butterflies there are in this picture.
Write the number of butterflies there are.

9 Put a ✔ under the triangle shape.

10 Put a ✖ on the rectangle shape.

11 Tom had 5 gumnuts and found 4 more.
How many gumnuts does he have now?

12 Put a ✔ on the shape with all curved sides.

13 Jan had 6 lollies and ate 2 of them.
How many lollies are left now?

14 Put a ✔ on the cone.

15 Put a ✖ on the cylinder.

16 Colour in the sphere.

17 Put a ✔ on the shape that makes the side of the cube.

18 Put a ✔ on the number sixty-five.

19 Put a ✔ beside the number sentence that matches the picture.

20 Put a ✔ on the picture that shows the first thing to happen.

21 Put a ✖ on the picture that shows the last thing to happen.

22 Rosa has $1.
She buys some fruit for 85 cents.
Put a ✔ on how much change she gets.

23 A group of children ate some fruit.
This is a graph of the fruit that they ate.
Later, two more apples were eaten.
Colour squares on the graph to show how many apples were eaten altogether.

24 Put a ✔ beside the clock that shows twelve-thirty.

25 Write the next number in the counting pattern.

26 Put a ✔ beside the number sentence that matches the picture.

27 Put a ✔ on the shape at the left of the square.

28 Circle the third Wednesday of May on this calendar.

29 Con had 24 marbles in his bag.
9 marbles fell out of the bag.
Write how many marbles are left in the bag.

30 Jill has 36 pencils in her pencil-case.
She puts 17 pencils on the table.
Write how many pencils are in the pencil-case now.

Ezi-guide to

I can do maths

Level B

General information

- *I can do maths* is un-timed, but will take about 30 to 40 minutes.
- Sufficient time should be allowed for all or most children to complete each question.
- If children are working slowly, or seem to be tiring, a short break in the middle of the *I can do maths* session should be taken.
- *I can do maths* may be administered either individually or in a group; for children in their first year of school, groups of up to 10 or 15 children are recommended and for children in later years of schooling, it should be possible to administer *I can do maths* to a whole class group.
- *I can do maths* should be presented as part of regular class activity rather than as a 'test', but without compromising the necessary standardised administration procedures.
- Children should be told the purpose of *I can do maths* in terms that they can understand (e.g. as a means of finding out what the class has learned and as a guide to the teacher).
- Each question must be read aloud to the group so that performance is not dependent on reading ability.
- Responses to children's questions should provide no additional help or prompting.

Preparation for the *I can do maths* session

- You will need a copy of the Ezi-guide and an *I can do maths* booklet.
- The children will require an *I can do maths* booklet, a black-lead pencil to mark their answers, a ruler at least 10 centimetres long and an eraser.
- Children should be seated comfortably at tables or desks, with sufficient space between to ensure that a child cannot copy from a child seated nearby.
- The room should be well lit and ventilated, and any distracting material should be removed from where the children are seated.

Beginning an *I can do maths* session

The information sections on the covers of the *I can do maths* booklet should be completed by either yourself or the children as appropriate. Children should be given as much help as necessary if they are completing this part of the booklet.

Introduction for the children

Before starting the *I can do maths* questions, the following general points should be made to the children, although the wording may be varied to suit the particular group:

- Today we are going to do some questions about shapes and numbers.
- I will read all the questions to you.
- You will have plenty of time to do the questions.
- Some of the questions are easy, and some are harder. Don't worry if you can't answer a question. Just do the best you can.
- Mark your answers on the booklet. If you make a mistake, cross (or rub) it out neatly and write your new answer.
- You may write on the booklet for rough work (working out).
- If you have a question, put up your hand. I will help you, but I won't tell you the answer.

Finishing an *I can do maths* session

At the end of an *I can do maths* session the children should be thanked and the booklets checked to ensure that the relevant information has been entered in the information sections of the covers of the booklets.

Ezi-guide to

I can do maths

Level B

Administering *I can do maths*

Ask the children to open their test booklets and look at Question 1. If necessary, use your own booklet to show where Question 1 is on the page. The question should then be read aloud. If any of the children seem uncertain as to what to do, the instructions should be repeated, and further help and explanation given to make sure that they understand what is required.

Children should be encouraged to make a response rather than to leave the answer out (have a go).

Proceed through the remaining *I can do maths* questions in the same way. Allow sufficient time for all or most children to make a response before moving on to the next question. If necessary, use your own booklet to point to the particular question that is being worked on.

The text for all questions is below.

Note that a ruler is needed for Question 25.

---

1 Put a ✔ on the rug that covers the largest area.

2 Put a ✔ beside the longer line.

3 Put a ✔ under the coin you need to buy the pencil.

4 Put a ✔ on the shape with all curved sides.

5 Put a ✖ on the shape with all straight sides.

6 Put a ✔ on the number sixty-five.

7 Put a ✔ under the runner who is second in the race.

8 Put a ✔ on the rectangle shape.

9 Colour in the sphere.

10 Put a ✔ on the cone.

11 Put a ✖ on the cylinder.

12 Tom had 5 gumnuts and found 4 more.
How many gumnuts does he have now?

13 Jan had 6 lollies and ate 2 of them.
How many lollies are left now?

14 Put a ✔ on the shape that makes the side of the cube.

15 Put a ✔ on the picture that shows the first thing to happen.

16 Put a ✖ on the picture that shows the last thing to happen.

17 Put a ✔ beside the number sentence that matches the story.
There were 8 ducks on the pond.
3 ducks flew away.
How many ducks on the pond now?

18 A group of children ate some fruit.
This is a graph of the fruit that they ate.
Later, two more apples were eaten.
Colour squares on the graph to show how many apples were eaten altogether.

19 Put a ✔ on the number nine hundred and fifty.

20 Put a ✔ on the shape at the left of the square.

21 Rosa has $1.
She buys some fruit for 85 cents.
Put a ✔ on how much change she gets.

22 Put a ✔ beside the clock that shows twelve-thirty.

23 Write the next number in the counting pattern.

24 Put a ✔ beside the number sentence that matches the picture.

25 Use your ruler to measure the lines.
Put a ✔ on the line that is 10 centimetres.

26 Circle the third Wednesday of May on this calendar.

27 Write the answer to this problem.

28 Con had 24 marbles in his bag.
9 marbles fell out of the bag.
Write how many marbles are left in the bag.

29 Write the answer to this problem.

30 Jill has 36 pencils in her pencil-case.
She puts 17 pencils on the table.
Write how many pencils are in the pencil-case now.

31 Write the answer to this problem.

32 Write the answer to this problem.

33 Write a fraction that is bigger than $\frac{1}{2}$.

TM

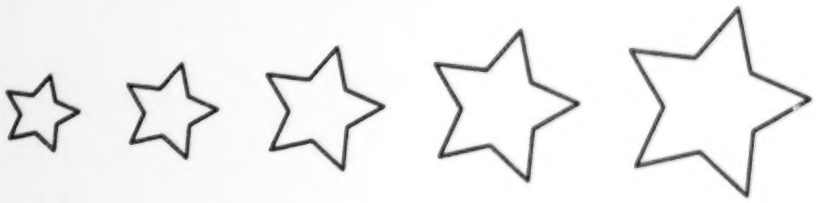
I can do maths

Level A

Name

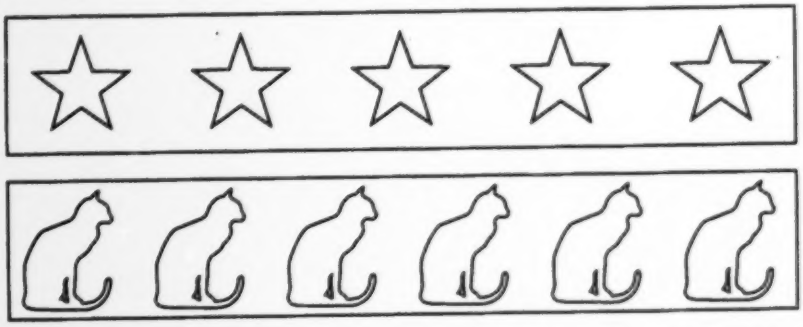
1

Put a ✔ on the smallest star.



2

Put a ✔ on the picture with more things in it.



3

Put a ✔ under the ten cent coin.

4

Put a ✔ on the longest snake.

5

Put a ✖ on the shortest snake.

6

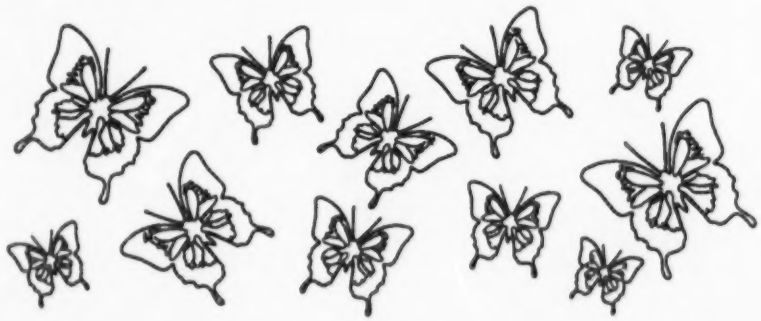
Put a ✔ under the runner who is second in the race.

7

Put a ✔ under the coin you need to buy the pencil.

8

Count how many butterflies there are in this picture.



Write the number of butterflies there are.

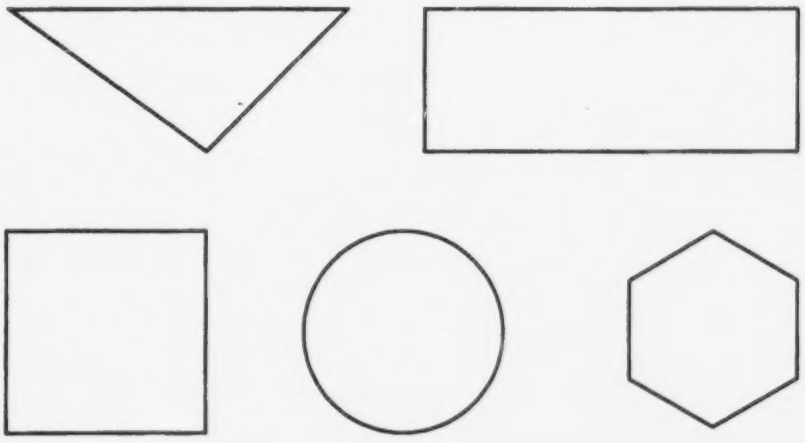
_____

9

Put a ✔ under the triangle shape.

10

Put a ✖ on the rectangle shape.



11

Tom had 5 gumnuts and found 4 more.

How many gumnuts does he have now?

_____

12

Put a ✓ on the shape with all curved sides.

13

Jan had 6 lollies and ate 2 of them.

How many lollies are left now?

_____

4

14

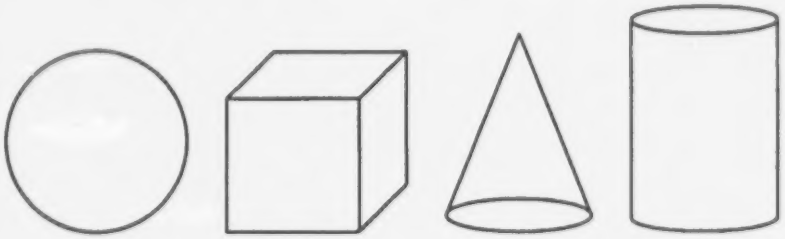
Put a ✔ on the cone.

15

Put a ✖ on the cylinder.

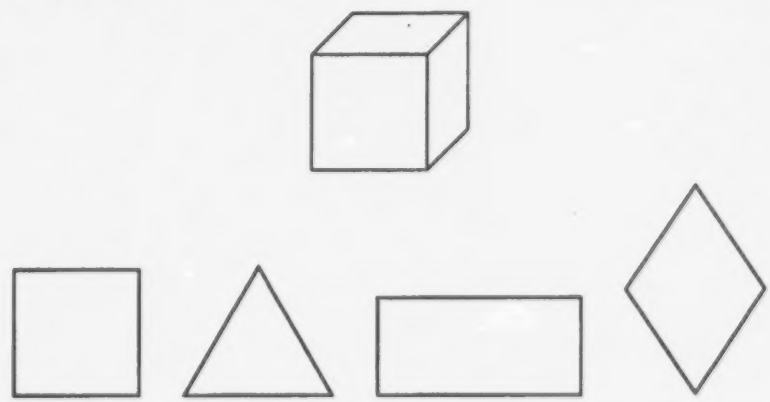
16

Colour in the sphere.



17

Put a ✔ on the shape that makes the side of the cube.



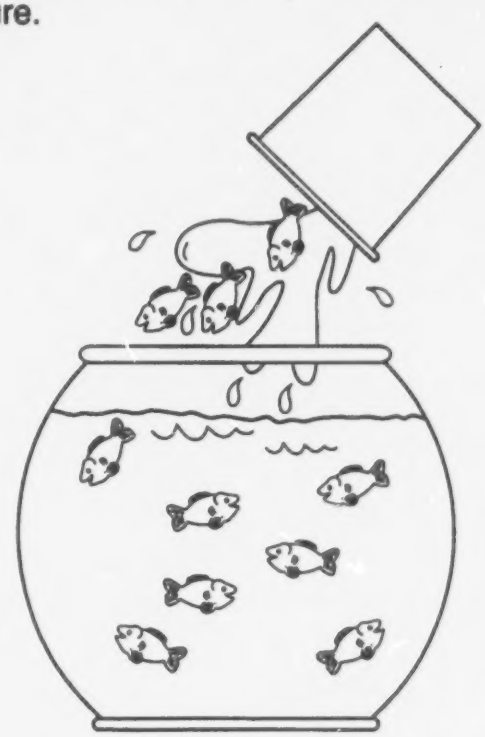
18

Put a ✔ on the number sixty-five.

56	165
65	605

19

Put a ✔ beside the number sentence that matches the picture.



3 + 4 = 7

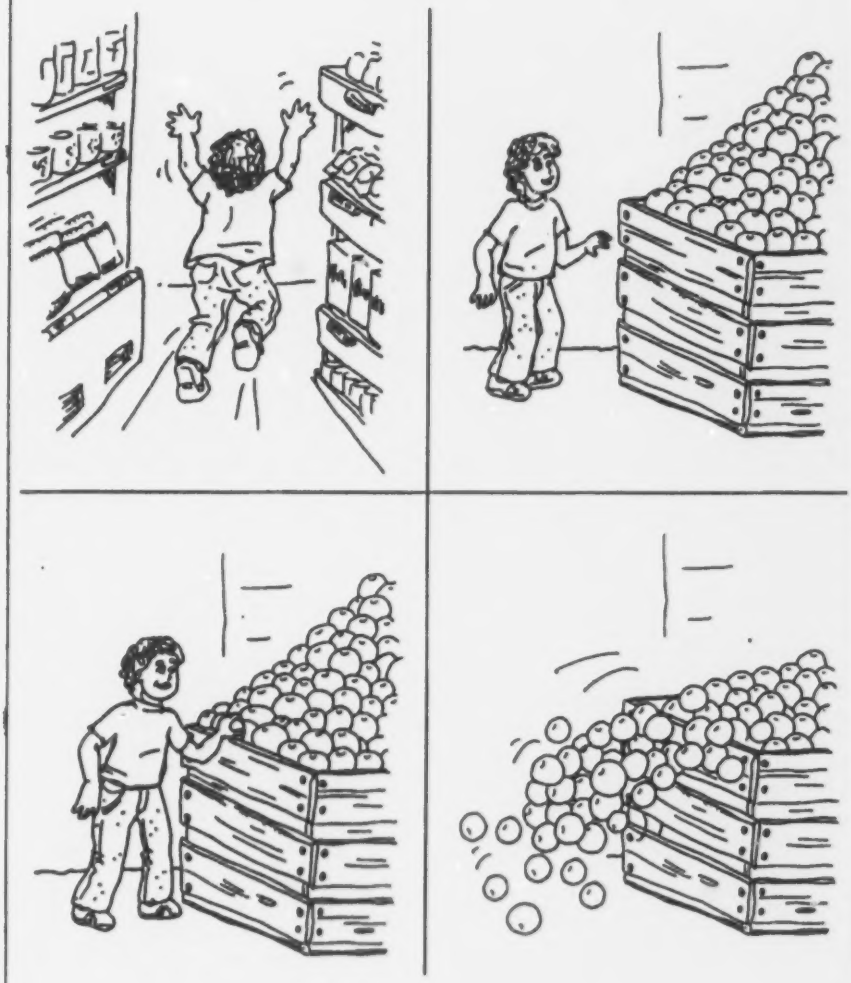
7 − 4 = 3

7 − 3 = 4

7 + 3 = 10

20 Put a ✓ on the picture that shows the first thing to happen. ☐

21 Put a ☒ on the picture that shows the last thing to happen. ☐



22

Rosa has $1.

She buys some fruit for 85 cents.

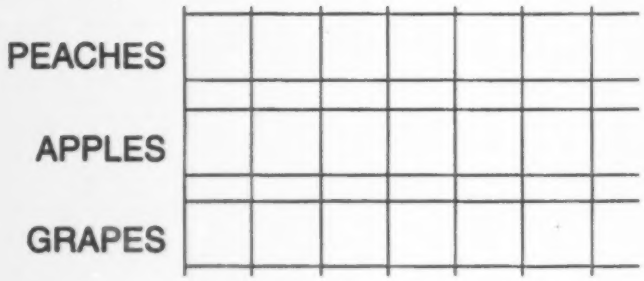
Put a ✓ on how much change she gets.

5 cents	15 cents
10 cents	20 cents

23

A group of children ate some fruit.

This is a graph of the fruit that they ate.

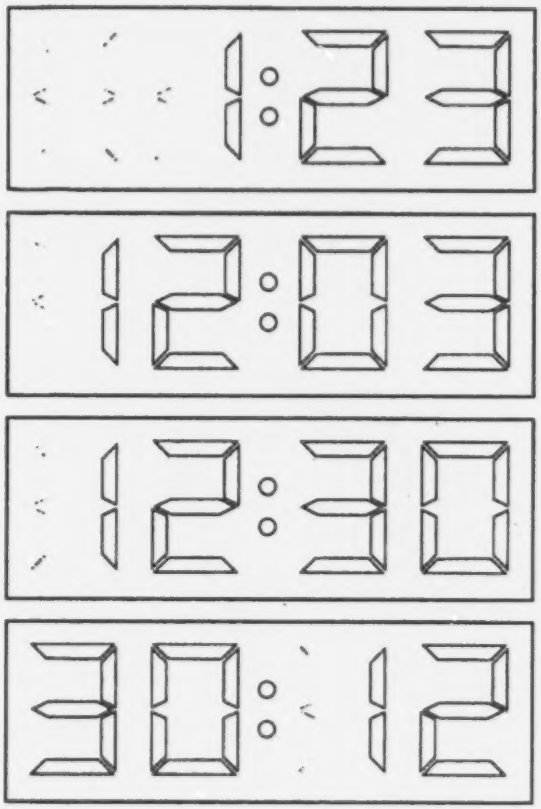


Later, two more apples were eaten.

Colour in squares on the graph to show how many apples were eaten altogether.

24

Put a ✓ beside the clock that shows twelve-thirty.



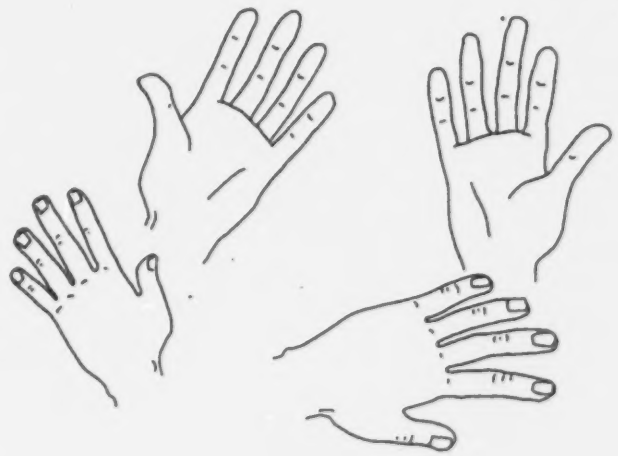
25

Write the next number in the counting pattern.

13 15 17 _____

26

Put a ✓ beside the number sentence that matches the picture.



4 + 5 = 9

20 − 4 = 16

4 x 5 = 20

20 − 5 = 15

27

Put a ✔ on the shape at the left of the square.

28

Circle the third Wednesday of May on this calendar.

MAY						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

29

Con had 24 marbles in his bag.

9 marbles fell out of the bag.

Write how many marbles are left in the bag.

_____

30

Jill has 36 pencils in her pencil-case.

She puts 17 pencils on the table.

Write how many pencils are in the pencil-case now.

_____

Name _____

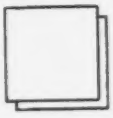
School _____

Year Level _____ Class _____

Date of Birth _____ Sex _____

Today's Date _____ Age _____
Years Months

Number score



Measurement score

Space score

Total score

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TH

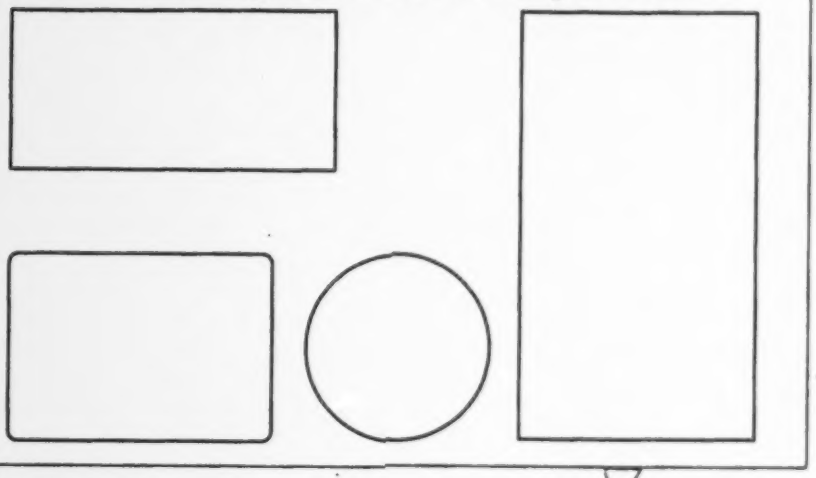
I can do maths

Level B

Name

1

Put a ✔on the rug that covers the largest area.



2

Put a ✔ beside the longer line.

3

Put a ✔ under the coin you need to buy the pencil.

4

Put a ✔ on the shape with all curved sides.

5

Put a ✖ on the shape with all straight sides.

6

Put a ✔ on the number sixty-five.

56	165
65	605

7

Put a ✔ under the runner who is second in the race.

8

Put a ✔ on the rectangle shape.

9

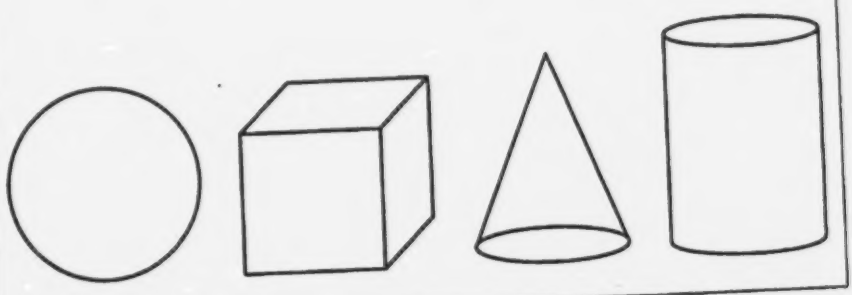
Colour in the sphere.

10

Put a ✔ on the cone.

11

Put a ✘ on the cylinder.



12

Tom had 5 gumnuts and found 4 more.

How many gumnuts does he have now?

_____

13

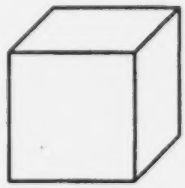
Jan had 6 lollies and ate 2 of them.

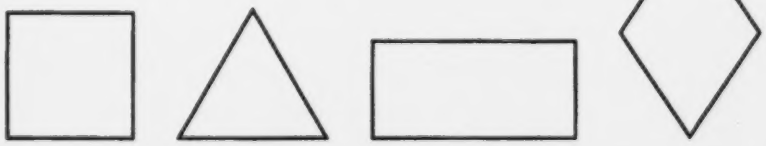
How many lollies are left now?

_____

14

Put a ✔ on the shape that makes the side of the cube.



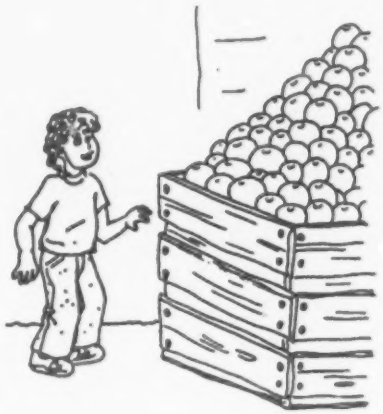


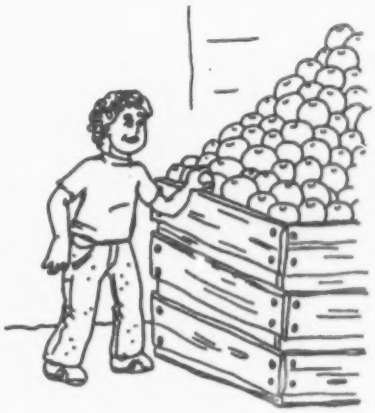
15

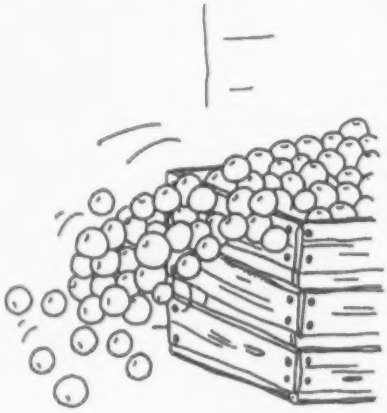
Put a ✔ on the picture that shows the first thing to happen.

16

Put a ✘ on the picture that shows the last thing to happen.







17

Put a ✔ beside the number sentence that matches the story.

There were 8 ducks on the pond.

3 ducks flew away.

How many ducks are on the pond now?

3 + 5 = 8

7 - 4 = 3

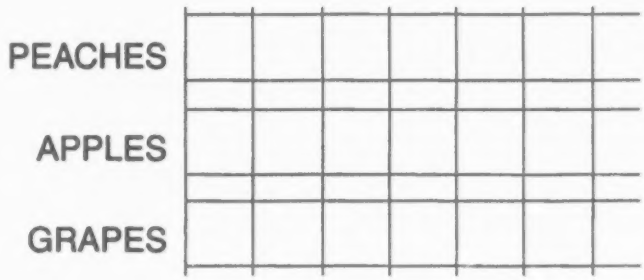
8 - 3 = 5

8 + 3 = 11

18

A group of children ate some fruit.

This is a graph of the fruit that they ate.



Later, two more apples were eaten.

Colour in squares on the graph to show how many apples were eaten altogether.

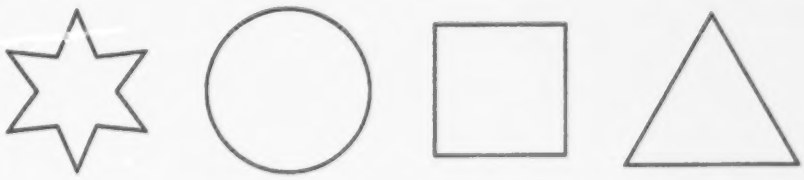
19

Put a ✔ on the number nine hundred and fifty.

950	9500
9050	90050

20

Put a ✔ on the shape at the left of the square.



21

Rosa has $1.

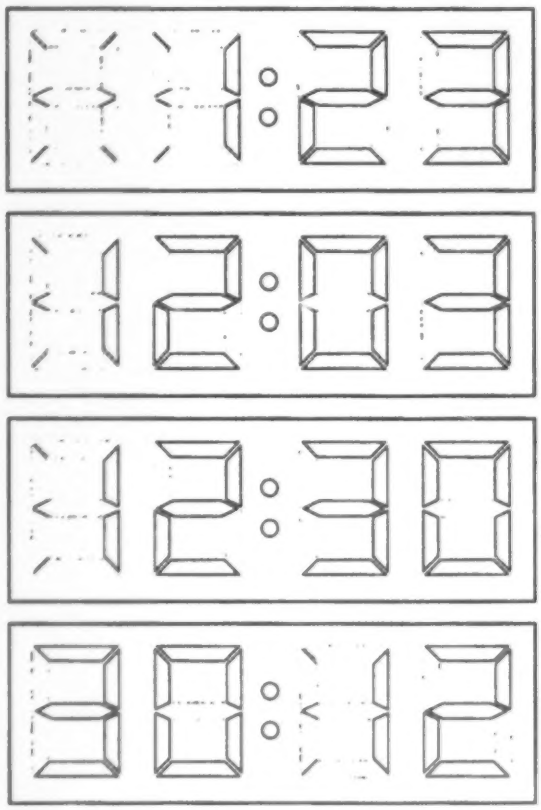
She buys some fruit for 85 cents.

Put a ✔ on how much change she gets.

5 cents	15 cents
10 cents	20 cents

22

Put a ✔ beside the clock that shows twelve-thirty.



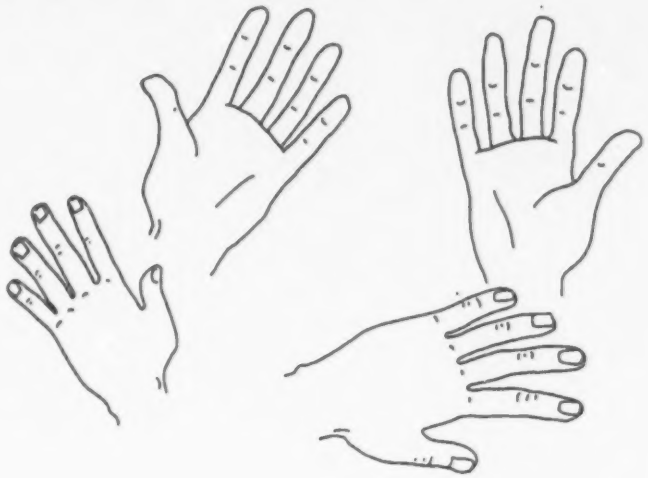
23

Write the next number in the counting pattern.

13, 15, 17, _____

24

Put a ✔ beside the number sentence that matches the picture.



4 + 5 = 9

20 - 4 = 16

4 x 5 = 20

20 - 5 = 15

25

Use your ruler to measure the lines.

Put a ✔ on the line that is 10 centimetres.

26

Circle the third Wednesday of May on this calendar.

MAY						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

27

Write the answer to this problem.

37 – 14 = _____

28

Con had 24 marbles in his bag.

9 marbles fell out of the bag.

Write how many marbles are left in the bag.

_____

29

Write the answer to this problem.

14 + 31 = _____

30

Jill has 36 pencils in her pencil-case.

She puts 17 pencils on the table.

Write how many pencils are in the pencil-case now.

_____

31

Write the answer to this problem.

25 + 18 = _____

32

Write the answer to this problem.

$53 - 17 =$ _____

33

Write a fraction that is bigger than $\frac{1}{2}$.

_____

Name _____

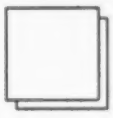
School _____

Year Level _____ Class _____

Date of Birth _____ Sex _____

Today's Date _____ Age _____
Years Months

Number score



Measurement score

Space score

Total score

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